CLAIMS

1. An analog-to-digital converter comprising:

at least one stage for converting an analog input signal into a digital output signal using a parallel quantizer comparing the analog input signal with a plurality of threshold values in parallel;

means, electrically coupled with at least one selected stage of the at least one stage, for estimating an analog correction signal indicative of the mean value of a quantization error of the at least one selected stage; and

means, electrically coupled with the at least one selected stage, for at least partially compensating an offset error of the parallel quantizer in the at least one selected stage according to the analog correction signal.

2. The analog-to-digital converter according to claim 1, wherein the parallel quantizer in the at least one selected stage includes a plurality of comparators each one for comparing a first voltage corresponding to the analog input signal with a second voltage corresponding to a respective threshold value, and at least one capacitor for sampling the first voltage or the second voltage, the means for compensating including means for charging the at least one capacitor to a voltage corresponding to the analog correction signal.

3. The analog-to-digital converter according to claim 1, comprising:

a plurality of stages, including the at least one stage and at least one further stage, the plurality of stages being cascade-connected in a sequence,

and wherein each stage different from a last stage in the sequence includes

means for determining an analog residue indicative of the corresponding quantization error; and

means for generating the analog input signal for a next stage in the sequence according to the analog residue.

4. The analog-to-digital converter according to claim 3, wherein the parallel quantizer in the at least one selected stage includes a plurality of comparators each one for comparing a first voltage corresponding to the analog input signal with a second voltage corresponding to a respective threshold value, and at least one capacitor for sampling the first voltage or the second voltage, the means for compensating including means for charging the at least one capacitor to a voltage corresponding to the analog correction signal.

5. The analog-to-digital according to claim 3, wherein the means for estimating includes means for calculating a digital correction signal indicative of the mean value of a digital residue consisting of a digital representation of the analog residue provided by the digital output signal of at least one stage following the at least one selected stage in the sequence, and means for converting the digital correction signal into the analog correction signal.

6. The analog-to-digital converter according to claim 5, wherein each stage following the at least one selected stage has a resolution lower than the resolution of the selected stage.

7. The analog-to-digital converter according to claim 5, further including means for reducing the resolution of the digital correction signal to a predefined value.

8. The analog-to-digital converter according to claim 5, wherein the analog correction signal has a dynamic range proportional to the dynamic range of the corresponding quantization error according to a predefined factor.

9. The analog-to-digital converter according to claim 5, wherein the means for calculating the digital correction signal includes a digital filter for providing a digital residual error indicative of the mean value of a predefined number of samples of the digital residue and an integrator for converging towards the digital correction signal according to the digital residual error.

10. The analog-to-digital converter according to claim 5, wherein the at least one stage following the at least one selected stage consists of a plurality of stages, the converter further including means for combining the digital output signals of the plurality of stages following the selected stage into the digital residue.

11. The analog-to-digital converter according to claim from 10, further including means for reducing the resolution of the digital correction signal to a predefined value.

12. The analog-to-digital converter according to claim 10, wherein the analog correction signal has a dynamic range proportional to the dynamic range of the corresponding quantization error according to a predefined factor.

13. The analog-to-digital converter according to claim 10, wherein the means for calculating the digital correction signal includes a digital filter for providing a digital residual error indicative of the mean value of a predefined number of samples of the digital residue and an integrator for converging towards the digital correction signal according to the digital residual error.

14. The analog-to-digital converter according to claim 10, wherein each stage following the at least one selected stage has a resolution lower than the resolution of the at least one selected stage.

15. The analog-to-digital converter according to claim 14, wherein the analog correction signal has a dynamic range proportional to the dynamic range of the corresponding quantization error according to a predefined factor.

16. The analog-to-digital converter according to claim 14, wherein the means for calculating the digital correction signal includes a digital filter for providing a digital residual error indicative of the mean value of a predefined number of samples of the digital residue and an integrator for converging towards the digital correction signal according to the digital residual error.

17. The analog-to-digital converter according to claim 14, further including means for reducing the resolution of the digital correction signal to a predefined value.

18. The analog-to-digital converter according to claim 17, wherein the means for calculating the digital correction signal includes a digital filter for providing a digital residual error indicative of the mean value of a predefined number of samples of the digital residue and an integrator for converging towards the digital correction signal according to the digital residual error.

19. The analog-to-digital converter according to claim 17, wherein the analog correction signal has a dynamic range proportional to the dynamic range of the corresponding quantization error according to a predefined factor.

20. The analog-to-digital converter according to claim 19, wherein the means for calculating the digital correction signal includes a digital filter for providing a digital residual error indicative of the mean value of a predefined number of samples of the digital residue and an integrator for converging towards the digital correction signal according to the digital residual error.

21. An analog-to-digital conversion method including the steps of:

at least one stage included in an analog-to-digital converter converting an analog input signal into a digital output signal using a parallel quantizer comparing the analog input signal with a plurality of threshold values in parallel; and

for at least one selected stage of the at least one stage,

estimating an analog correction signal indicative of the mean value of a quantization error of the at least one selected stage, and

at least partially compensating an offset error of the parallel quantizer in the at least one selected stage according to the analog correction signal.

22. A computing system comprising:

a computing circuit; and

at least one analog/digital converter (ADC), electrically coupled with the computing circuit, each of the at least one analog/digital converter including :

at least one stage for converting an analog input signal into a digital output signal using a parallel quantizer comparing the analog input signal with a plurality of threshold values in parallel;

means, electrically coupled with at least one selected stage of the at least one stage, for estimating an analog correction signal indicative of the mean value of a quantization error of the at least one selected stage; and

means, electrically coupled with the at least one selected stage, for at least partially compensating an offset error of the parallel quantizer in the at least one selected stage according to the analog correction signal.